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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,568	03/30/2004	Rahul Gupta	12406-155001 / P2004,0388	3687

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FISH & RICHARDSON P.C.
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
GARRETT, DAWN L	

ART UNIT	PAPER NUMBER
1774	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/812,568	GUPTA ET AL.	
	Examiner	Art Unit	
	Dawn Garrett	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7 and 9-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7,9-22,24-26 and 29-50* is/are rejected.

7)☒ Claim(s) *23,27 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 16, 2007 has been entered.

2. The amendment filed April 16, 2007 has been entered. Claims 1, 11, 26, 28, 43, 49 and 50 were amended. Claims 5 and 8 are canceled.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. The rejection of claims 27 and 28 under 35 U.S.C. 103(a) as being unpatentable over Endo et al. (US 6,787,063) in view of Kwong et al. (US 6,982,179) is withdrawn.

5. Claims 26 and 29-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al. (US 6,787,063) in view of Kwong et al. (US 6,982,179). Endo et al. discloses electro-optical devices (see abstract). Example 2 describes a device comprising a glass substrate with an indium tin oxide (ITO) coating per the instant "deposition surface" (see col. 11, lines 18-19). Pixels comprised of polyimide film and SiO_2 film formed by lithography are disposed on the ITO anode layer per the instant pocket resist (see col. 11, lines 18-19). The hole injection-transportation composition comprises 11.08% Baytron P (a PEDOT:PSS conductive polymer) per claim 31. The OLED further comprises an emitting layer over the hole injection-transportation layer (see col. 11, lines 46-52). The cathode is formed over the emission layer

(see col. 11, lines 53-55). The device may further comprise thin film transistors per instant claim 45 (see col. 10, lines 51-54). With regard to claims 33-36, the hole transporting layer made from PEDOT:PSS is deemed to have the property of wave-guiding, because PEDOT:PSS is the same material as taught by applicant for the hole transporting layer. Endo et al. clearly discloses multiple organic functional layer disposed between resist material, but does not teach that one of the organic layers is cross-linked. Kwong et al. (US 6,982,179) teaches in analogous art depositing a first organic layer that is insoluble to the second layer (see abstract). One way of achieving insolubility for the first layer is to cross-link the hole transport layer (see col. 10, lines 28-53, Fig. 3 description). Kwong et al. further teaches cross-linking increases the mechanical strength and thermal stability of the thin film layer (see col. 11, lines 38-40). Kwong et al. further teaches blocking layers (see col. 6, lines 53-67). The cross-linking step taught by Kwong et al. is considered to render the material different from an uncrosslinked material per claim 26. Kwong et al. further teaches other layers may be crosslinked per claim 49 (see col. 11, lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the functional layers of a device, including crosslinked layers, taught by Kwong et al. for the Endo et al. device, because the layers taught by Kwong are functional organic layers of an OLED device and Kwong et al. teaches the benefit of crosslinking some of the layers. Claims 39 and 40 are included in this rejection, because as written, the claims require a product-by-process limitation. The claims only require that the final product in crosslinked. Absent evidence otherwise, the crosslinked product taught by Kwong and the resulting crosslinked final product of the claims would be the same.

6. The rejection of claims 27 and 28 under 35 U.S.C. 103(a) as being unpatentable over Kwong et al. (US 2004/0214038 A1) in view of Kwong et al. (US 6,982,179) is withdrawn.

7. Claims 26 and 29-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwong et al. (US 2004/0214038 A1) in view of Kwong et al. (US 6,982,179). Kwong et al. '038 discloses electronic devices comprising an anode layer formed of ITO (see par. 27) per the "deposition surface", a polyimide photoresist grid (see par. 72) per the resist pocket and a hole injection layer formed by a solution of PEDOT:PSS conductive polymer (see par. 52). The device further comprises an emissive layer (see Kwong et al. '038 claim 5). With regard to claims 31-33, the hole transporting layer made from PEDOT:PSS is deemed to have the property of wave-guiding, because PEDOT:PSS is the same material as taught by applicant for the hole transporting layer. The device also comprises a cathode (see par. 55). Kwong et al. '038 discloses the materials and structures described are applicable to organic electroluminescent devices (OLEDs), organic solar cells, and organic transistors (see par. 60) per claims 45 and 46. Kwong et al. '038 clearly discloses multiple organic functional layer disposed between resist material, but does not teach that one of the organic layers is cross-linked. Kwong et al. (US 6,982,179) teaches in analogous art depositing a first organic layer that is insoluble to the second layer (see abstract). One way of achieving insolubility for the first layer is to cross-link the hole transport layer (see col. 10, lines 28-53, Fig. 3 description). Kwong et al. '179 further teaches cross-linking increases the mechanical strength and thermal stability of the thin film layer (see col. 11, lines 38-40). Kwong et al. '179 further teaches blocking layers (see col. 6, lines 53-67). The cross-linking step taught by Kwong et al. '179 is considered to render the material different from an uncrosslinked material per claim 26. Kwong et al. '179 further teaches other layers may

be crosslinked per claim 49 (see col. 11, lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the functional layers of a device, including crosslinked layers, taught by Kwong et al. '179 for the Kwong et al. '038 device, because the layers taught by Kwong et al. '179 are functional organic layers of an OLED device and Kwong et al. '179 teaches the benefit of crosslinking some of the layers.

8. The rejection of claims 27-28 under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 2004/0021413 A1) in view of Kwong et al. (US 6,982,179) is withdrawn.

9. Claims 26 and 29-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 2004/0021413 A1) in view of Kwong et al. (US 6,982,179). Ito et al. discloses an electroluminescent display comprising an anode comprising ITO per the deposition surface (see par. 189), partition walls comprising a photoresist material (see par. 189), and a PEDOT:PSS hole injection layer (see par. 170). With regard to claims 31-33, the hole transporting layer made from PEDOT:PSS is deemed to have the property of wave-guiding, because PEDOT:PSS is the same material as taught by applicant for the hole transporting layer. Ito et al. further discloses a luminescent layer (see par. 174) and a cathode (see par. 182). Ito et al. clearly discloses multiple organic functional layer disposed between resist material, but does not teach that one of the organic layers is cross-linked. Kwong et al. (US 6,982,179) teaches in analogous art depositing a first organic layer that is insoluble to the second layer (see abstract). One way of achieving insolubility for the first layer is to cross-link the hole transport layer (see col. 10, lines 28-53, Fig. 3 description). Kwong et al. further teaches cross-linking increases the mechanical strength and thermal stability of the thin film layer (see col. 11, lines 38-40). Kwong et al. further teaches blocking layers (see col. 6, lines 53-67). The cross-linking step taught by Kwong et al.

is considered to render the material different from an uncrosslinked material per claim 26. Kwong et al. further teaches other layers may be crosslinked per claim 49 (see col. 11, lines 14-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the functional layers of a device, including crosslinked layers, taught by Kwong et al. for the Ito et al. device, because the layers taught by Kwong are functional organic layers of an OLED device and Kwong et al. teaches the benefit of crosslinking some of the layers.

10. The rejection of claims 1-4, 6, 7, 9-13, 15-22, 24, 25, 27 and 28 under 35 U.S.C. 102(b) as being anticipated by Towns et al. (US 2002/0011779 A1) is withdrawn.

11. Claims 26, 29-44, 46-48 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Towns et al. (US 2002/0011779 A1). Towns discloses electroluminescent devices comprising a first charge carrier injecting layer for injecting positive charge carriers and a second charge-carrier injecting layer for injecting negative charge carriers (the electrodes), an organic light-emitting layer located between the first and second charge-carrier injecting layers and an unpatterned conductive polymer layer located between the organic light-emitting layer and the patterned charge-carrier injecting layer (see abstract). Towns discloses the conductive polymer layer contains a cross-linking agent such as epoxy-silane (see par. 13). Silane is one of the crosslinking agents recited in claim 1. The organic light-emitting layer and the conductive polymer layer read upon the "plurality of organic layers" . The polymers disclosed for the conductive polymer layer are known hole transporters (see par. 11-13). Although Towns does not specifically use the term hole transporting, the position of the conductive polymer layer between the light-emitting layer and the charge-carrier injecting layer (anode) would be

considered to transport holes in light of the conventional structure and functioning of electroluminescent devices. One of the charge carrier layers (electrodes) is considered to be a cathode (see par. 8). Towns discloses hole transporting material PEDOT:PSS (see par. 11-13). The cross-linking step taught by Towns et al. is considered to render the material different (i.e. different properties and therefore functionality) from an uncrosslinked material per claim 26.

12. The rejection of claim 50 under 35 U.S.C. 102(e) as being anticipated by Kwong et al. (US 6,982,179) is withdrawn.

13. The rejection of claims 1, 6, 7, 14, 16, and 25 under 35 U.S.C. 102(e) as being anticipated by Sirringhauss et al. et al. (US 2004/0266207 A1) is withdrawn.

14. The rejection of claim 50 under 35 U.S.C. 102(e) as being anticipated by Ottermann et al. (US 2004/0101618 A1) is withdrawn.

15. Claims 1-4, 6, 7, 9-13, 15-22, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Towns et al. (US 2002/0011779 A1) in view of Yoshida et al. (US 6,395,209). Towns discloses electroluminescent devices comprising a first charge carrier injecting layer for injecting positive charge carriers and a second charge-carrier injecting layer for injecting negative charge carriers (the electrodes), an organic light-emitting layer located between the first and second charge-carrier injecting layers and an unpatterned conductive polymer layer located between the organic light-emitting layer and the patterned charge-carrier injecting layer (see abstract). Towns discloses the conductive polymer layer contains a cross-linking agent *such as* epoxy-silane (see par. 13), but fails to teach the specific crosslinking agents of claim 1. Yoshida et al. teaches the equivalency of epoxy-based agents and amide agents for crosslinking a film (see Yoshida et al. col. 9, line 60 to col. 10, line1). It would have been obvious to one of

ordinary skill in the art at the time of the invention to have used an amide crosslinking agent, because amide agents are equivalent to epoxy-based agents and agents *such as* epoxy-silane are desirable. The organic light-emitting layer and the conductive polymer layer read upon the "plurality of organic layers" of claim 1. The polymers disclosed for the conductive polymer layer are known hole transporters per claim 3 (see par. 11-13). Although Towns does not specifically use the term hole transporting, the position of the conductive polymer layer between the light-emitting layer and the charge-carrier injecting layer (anode) would be considered to transport holes in light of the conventional structure and functioning of electroluminescent devices. With regard to claim 12, one of the charge carrier layers (electrodes) is considered to be a cathode (see par. 8). With regard to claim 13, Towns discloses the required hole transporting material PEDOT:PSS (see par. 11-13). The cross-linking step taught by Towns et al. is considered to render the material different from an uncrosslinked material.

16. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Towns et al. (US 2002/0011779 A1) in view of Yoshida et al. (US 6,395,209) in further view of Fleming (US 6,111,357). Towns and Yoshida et al. are relied upon as set forth above. Town et al. teaches electroluminescent devices, but fails to teach a transistor is included. Fleming teaches in analogous art the addition of a thin film transistor to an organic electroluminescent device to provide the positive electrical potential (see claim 3 of Fleming). It would have been obvious to one of ordinary skill in the art a the time of the invention to have included a thin thin tranistor with the Towns et al. device, because one would expect the transistor to be beneficial in providing an electrical potential.

17. Claim 50 is rejected under 35 U.S.C. 102(b) as being anticipated by Okunaka et al. (US 2002/0106529). Okunaka et al. teaches a multi-layered organic electroluminescent device comprising layers patterned by a mask (see abstract and figures). The mask reads upon the "pocke" and "deposition region" of claim 50. Okunaka et al. discloses a light emitting layer as well as other layers may be crosslinked (see abstract and par. 120).

Allowable Subject Matter

18. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art fails to teach a device comprising all of the layers required by claim 23 wherein either the emissive layer or the electron transport layer is crosslinked and there is a specific crosslinking agent present as required by parent claim 1. Claims 27 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach the functionality of a cross-linking agent of claim 27 in combination with the other features required by the organic electronic device.

Response to Arguments

19. Applicant's arguments filed April 16, 2007 have been fully considered but they are not persuasive.

Applicant argues with regard to the rejection over Endo in view of Kwong, Kwong in view of Kwong, and Ito in view of Kwong, the references do not teach the cross-linking agents add functionality. The examiner submits crosslinking changes the properties of a material and

thereby changes the functionality of a material. The word "functionality" in claim 26 has been given the broadest interpretation.

With regard to claims 33-36, the claims only require that the material of the hole-transporting layer be PEDOT:PSS and are not drawn to other materials in the layer providing a wave guiding property. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., adding modifying groups) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With regard to the rejection of claim 26 over Towns, applicant argues the reference does not teach the cross-linking agents add functionality. The examiner submits crosslinking changes the properties of a material and thereby changes the functionality of a material. The word "functionality" in claim 26 has been given the broadest interpretation.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dawn Garrett
Primary Examiner
Art Unit 1774